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THE PLANT DISEASE REPORTER

Issued By

THE PLANT DISEASE SURVEY

Division of Mycology and Disease Survey

BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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THE PLANT DISEASE SURVEY
DIVISION OF MYCOLOGY AND DISEASE SURVEY

Plant Industry Station — Beltsville, Maryland
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VERTICILLIUM WILT OF COTTON DISCOVERED IN NORTH CAROLINA

S. G. Lehman and Howard Garriss

The wilt disease of cotton caused by Fusarium vasinfectum Atk. has been reported from many of the cotton growing counties of North Carolina. The use of wilt resistant varieties has become general in the localities where Fusarium wilt is prevalent.

On July 19, 1947, specimens of wilted cotton plants were received from Hertford County. Discoloration of the woody portion of the stems indicated wilt and a study of freehand sections revealed the presence of a mycelium in the vessels. Since the disease of cotton caused by Verticillium had not previously been recognized in North Carolina or adjacent States, the diseased plants in question might have been passed up as Fusarium wilt if the specimens had not been accompanied by the statement that the cotton was a well known wilt-resistant variety, seed of which had been obtained direct from the breeder in the spring of 1947.

Isolations were made from the discolored vascular tissues of three plants of this collection. One plant yielded a rapidly growing fungus having the characters of Fusarium vasinfectum. Two plants gave rise to a slowly growing fungus having verticillate conidiophores, conidia, and eventually black hyphae and minute sclerotia as described for Verticillium albo-atrum Reinke & Berth.

On July 23, 1947, other cotton plants having wilt symptoms were mailed to writers from Union County, North Carolina. This collection also was accompanied by the statement that the plants grew from seed of a wilt-resistant variety received directly from the breeder. Isolations from discolored vascular tissue of these plants yielded pure cultures of a fungus believed to be Verticillium albo-atrum. Within a few days after receipt of the specimens from Hertford and Union Counties, other cotton plants having wilt symptoms were received from Bertie County. Verticillium was isolated from these plants.

Subsequently to finding Verticillium in the wilted cotton plants received from Hertford, Union and Bertie Counties, isolations were attempted from additional collections made by the writers or by county agents in other localities. Verticillium was obtained from a majority of these plants including collections from four additional counties: Edgecombe, Northampton, Davie, and Mecklenburg. Table 1 lists certain information relative to the collections from which isolations were made. As shown in the table isolations were attempted from plants collected on 20 farms lying in 9 counties. Verticillium was found on 14 farms in 7 counties located at opposite extremes of an area extending about 230 miles in a northeasterly direction from Union and Mecklenburg Counties touching South Carolina to Hertford and Northampton Counties adjoining

Table 1. Data relative to cotton wilt collections and isolations in North Carolina in 1947.

Collection no.	Date Collected	County	Farm	Field	Variety of cotton	Fungi Obtained	Estimated percent plants showing symptoms	Preceding crops 1946-1945-1944
1	July 19	Hertford	1	a	Not known	Fusarium		
2	" "	"	1	b	Coker 100 WR	Verticillium	20	Peanuts-cotton-peanuts
4	July 25	Union	2		Coker 100 WR	Verticillium	20	Cotton-cotton-cotton
5	July 30	Bertie	3	a	Coker 100 Str. 9	"	10	Cotton-cotton-cotton
6	July 30	Bertie	4	a	Coker 100 WR	"	5	
7	July 30	Union	5		"	"	15	Cotton-cotton-cotton
8	Aug. 7	Edgecombe	6	a	"	"	1	Peanuts-corn-soybeans
9	Aug. 15	Northampton	7		Coker 100	"	"low"	
10	" "	"	8		"	"	"low"	
11	" "	"	9		"	"	"low"	
12	Aug. 11	Davie	10		Coker 200 st. 1	"	40	
13	Aug. 11	Northampton	11		Not known	"		
14	Aug. 15	Edgecombe	12		Coker 100	Fusarium		
15	Aug. 15	Chowan	13		Rowden 40	"		
16	Aug. 22	Hertford	1	b	Coker 100 WR	Verticillium	20	Peanuts-cotton-peanuts
17	Aug. 22	"	1	c	Coker 200	"	5	Corn-peanuts-corn
18	" "	"	14	a	"	"	5	Peanuts-cotton-?
19	" "	Bertie	15		Coker 100	Fusarium	1	
20	Aug. 23	Bertie	3	a	Coker 100 St. 9	Verticillium	10	
21	" "	Bertie	4	a	Coker 100 WR	"	5	
22	" "	Hertford	14	b	Coker 200	Fusarium	1	
23	" "	Edgecombe	16		Not known	"	1	
24	Aug. 24	Richmond	17		Coker 100	Fusarium		
25	Aug. 26	Union	18		Coker 100 WR	Verticillium	20	Cotton-cotton-?
26	Aug. 26	Union	19	a	Coker 100	None	trace	
27	" "	"	19	b	Coker	Fusarium	1	
28	Aug. 25	Mecklenburg	20		Not known	Verticillium		
29	Sept. 4	Edgecombe	6	b	Mexican	"	1	Peanuts-corn-soybeans
30	" "	"	6	c	"	"	1	Corn-cotton-soybeans
31	" "	"	6	d	"	"	10	Corn

Virginia. Figure 1 shows the counties in which cotton infected with Verticillium was found. It seems probable that infested fields might have been found in other counties if an intensive survey has been made. The wide distribution of the disease indicates that the fungus may have been present in cotton for some years previous to 1947. The owner of Farm 1 in Hertford County saw the disease in 1945 and owners of Farms 2 and 5 in Union County saw the disease in 1946. All three farmers thought the disease was wilt and planted Fusarium resistant Coker 100 in 1947. All had moderate to high percentage of disease in 1947.

The percentage of plants showing symptoms as estimated by county agents and the writers ranged from 1 or less to 40. The fields observed by the writers usually showed an area of high percentage infection at one side or end with much lower infection in other parts of the field. Quite often the most highly diseased part of a field was adjacent to a dwelling and probably in the past had been used as a family garden. The fungus may have developed first on some garden vegetable such as potato, tomato, or okra and appeared on cotton when this space was utilized for that crop.

The diseased fields were first seen by the writers in late August. The growers stated that the symptoms had been much more severe earlier in mid-July, and that the plants at the time of the writers' visit appeared to be recovering from the effects of the disease. None seen by the writers had been killed, many were appreciably stunted, but others which showed unmistakable symptoms were not appreciably smaller than adjacent symptomless plants. Many of the plants had shed a considerable portion of their leaves but were putting out new branches from the lower part of the stem.

The highest infestations observed were in fields where cotton had grown continuously for three or more years or where a rotation consisting of cotton and peanuts in alternate years had been used for a long period. Less severe infestations were observed where cotton followed corn.

Two isolates of Verticillium were tested for pathogenicity on cotton in the greenhouse. On September 6, roots of young cotton plants were dipped into a liquid synthetic nutrient culture of Isolate 2 from Hertford County and transplanted to steamed sandy loam soil in 6-inch pots. On the same date a similar culture of Isolate 4 from Union County was poured around the bases of young cotton plants 10 to 12 inches tall growing in steamed river sand. Appropriate controls were set up. By October 31, 8 out of 9 plants inoculated with Isolate 2 and 5 out of 6 inoculated with Isolate 4 showed unmistakable symptoms of Verticillium wilt. Verticillium was reisolated from the inoculated diseased plants. All plants in the control pots remained healthy to the end of the test.

So far as the writers have been able to learn by review of the litera-

Figure 1. Shading indicates counties in North Carolina where Verticillium wilt of cotton was found in 1947

ture, these isolations and inoculations constitute the first proof of the occurrence of the Verticillium wilt disease on cotton in North Carolina. Apparently, aside from Carpenter's (1) report in 1914 of finding Verticillium albo-atrum in two cotton plants at Arlington, Virginia, this is the first evidence of the disease on cotton east of Tennessee and Mississippi. Verticillium has, however, been reported to be capable of attacking okra and many other cultivated species which are grown in this area (2,3).

Literature Cited.

(1) Carpenter, C. W. The Verticillium wilt problem. Phygopathology 4: 393. December. 1914.
(2) _____. Wilt diseases of okra and the Verticillium-wilt problem. Journ. Agr. Res. 12: 529-546. 1918.
(3) Rudolph, B. A. Verticillium hydromycosis. Hilgardia 5: 197-353. 1931.

NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION AND NORTH CAROLINA AGRICULTURAL EXTENSION SERVICE

THE OCCURRENCE OF BIG BUD OF TOMATO IN SOUTHERN CALIFORNIA

John T. Middleton

In the December 15, 1947 issue of the Plant Disease Reporter (31: 478-479) there is a report on the occurrence of the tomato big bud virus as noted in central California. The description of the disease presented agrees well with that of the original. The disease was reported as occurring only in two counties on a total of four plants. This suggests that the virus may be uncommon on tomato and not of general distribution. Whereas the above inference may be correctly applied to inland-central California, the writer feels that this December report might be augmented and extended to properly portray the distribution and frequency of big bud of tomato for southern California.

Big bud was apparently first recorded from California in 1940 (PDR 31: 479). Since that initial report big bud of tomato has been observed in all subsequent years, albeit in varying percentages of infection. The disease has been found in the following counties: Imperial, Kern, Los Angeles, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, and Ventura.

The disease has been noted on all varieties of tomatoes grown commercially in this area. These include the following: Earliana, First Early, Norton, Pearson, Pennheart, San Marzano, Simi, and Stone.

Moderately low percentages of infection seem to be typical of the occurrence of big bud in tomato plantations, varying from none to 2.4 percent. The disease is commonly present in approximately 1 out of every 2,000 plants. Disease incidence is greater in coastal (6 counties) than in inland (4 counties) tomato-growing areas. Since tomatoes may be grown throughout the year in some of the coastal counties, and thereby supply a more or less continuous source of the virus, perhaps the relatively greater occurrence of the disease in coastal areas is not surprising. Tomatoes rarely grow throughout the year in inland counties, yet the disease is always present.

These rather limited observations seem to indicate that the big bud virus is generally distributed throughout southern California, that there would appear to be reservoirs of the virus other than tomato, and that the vector or vectors apparently are generally distributed over all the southern tomato planting areas of the State.

DIVISION OF PLANT PATHOLOGY, UNIVERSITY OF CALIFORNIA, RIVERSIDE

PROGRESS REPORTS ON LATE BLIGHT, TOBACCO BLUE MOLD, AND CUCURBIT DOWNY MILDEW

LATE BLIGHT (Phytophthora infestans). Potatoes in the Everglades region and in the Homestead area on the lower East Coast of FLORIDA had been or were being harvested at the middle of February. In the Homestead area potato late blight was controlled effectively by the use of Dithane-zinc sulfate-lime in a rigid spraying schedule. In experimental test plots only this material and Parzate were effective; all copper materials including copper-zinc chromate, failed. Tomatoes in the Homestead region suffered serious loss, but some of the better farmers kept it controlled even though surrounded by blighted fields. Two applications per week of Dithane-zinc sulfate-lime were necessary. All along the East Coast from Fort Lauderdale to Fort Pierce and inland throughout the Indiantown area tomato late blight was very active. The recent freezes did not seem to check it. Buyers avoided purchasing fruit from fields containing much blight. In northern East Coast areas late blight was active on potatoes around Stuart, and occurred at Sanford on seedlings in early tomato plant beds protected from the frost of January 14; younger tomato plantings at Sanford were still free at the middle of February, however. Both potatoes and tomatoes on the West Coast were affected at the end of December or beginning of January. The generally followed spray program had kept it controlled in potato fields of the Fort Myers area. The fall tomato crop in the Bradenton-Ruskin area was late but frost eliminated carry-over infection from this source as a danger to the spring crop. However, late blight appeared in tomato seed beds in the area by February 12, but was being kept under control with Dithane. In central Florida, the disease was present on potatoes and tomatoes in the vicinity of Leesburg, with abundant sporulation, prior to the killing frost at the middle of January.

BLUE MOLD (Peronospora tabacina) was reported from a new tobacco bed in Cook County, GEORGIA, February 6. Several applications of 15 percent Fermate successfully checked the disease. Several other affected beds, both new and old, were observed in Cook County February 13. There were only four clear days at Tifton from January 16 to February 14. It was during this period of cloudy weather that initial blue mold infections occurred.

The fungus was active all through the winter on Nicotiana repanda in the Lower Rio Grande Valley of TEXAS.

DOWNY MILDEW (Pseudoperonospora cubensis) has been reported on squash and cucumbers around Stuart on the upper East Coast of FLORIDA.

THE HELMINTHOSPORIUM BLIGHT SITUATION IN THE UPPER MISSISSIPPI VALLEY REGION AS OF DECEMBER 1947[1]

J. R. Wallin

Helminthosporium victoriae Meehan & Murphy has been a very destructive fungus on oats for the past three years in Indiana, Illinois and Iowa. The other States of the region have experienced the ravages of the pathogen to a lesser extent.

Some pathologists of the region felt that serious losses might be averted in 1948 if a survey of the Helminthosporium blight situation were conducted and if the information obtained from the survey were sent to those States where H. victoriae might become epiphytotic. For example, W. F. Buchholtz of Iowa felt that much of the damage of 1947 might have been averted if all of the States had been adequately supplied with the mercury fungicides. In addition, H. C. Murphy of Iowa suggested that the pathologists of the region should know which States would have surpluses of resistant varieties.

Hence the following factors were considered in the present survey: (1) severity of blight in 1947; (2) the supply of mercury fungicide available for 1948; (3) the estimated oat acreage for 1948; (4) the percentage of seed oats to be treated in 1948; (5) the bushels of Clinton or other resistant varieties produced in 1947.

Table 1 was compiled from the replies of seven of the ten States contacted. The different columns represent the best estimates available at the time of the survey. The total bushels of seed required to plant the 1948 oat acreage was calculated from the estimated oat acreage for 1948. The last column relating to the bushels of resistant seed that each State will need in 1948 was esimated by subtracting the bushels of Clinton or other resistant varieties produced from the total bushels of seed required to plant the 1948 acreage.

The data indicate that the 1947 blight damage was greatest in Iowa, Illinois and Indiana while only moderate damage was reported from the Great Plains States of Nebraska and Kansas. In the northern States of North Dakota and Wisconsin, Helminthosporium blight was relatively unimportant.

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[1] The data in this report were obtained through the splendid cooperation of Drs. R. E. Vaughan of Wisconsin; R. M. Caldwell of Indiana; J. E. Livingston of Nebraska; E. P. Sylwester and H. C. Murphy of Iowa; Benjamin Koehler of Illinois; W. E. Brentzel of North Dakota; and E. D. Hansing of Kansas.

Table 1. Report of seven States regarding the Helminthosporium blight of oats.

State	Blight damage 1947	Supply of mercury fungicide for 1948	Estimated % seed oats to be treated 1948	Estimated oat acreage 1948	Total bushels seed required to plant 1948 acreage[a]	Bushels Clinton or resist. varieties produced 1947	Estimated bushels resist. seed needed 1948
Illinois	heavy	adequate[b]	75	3,374,000	10,122,000	--	excess
Indiana	heavy	adequate	--	1,300,000	3,900,000	2,500,000 + uncertified	excess
Iowa	heavy	adequate	50	5,500,000	16,500,000	18,000,000	excess
Nebraska	moderate	adequate	30-50	2,300,000	6,900,000	15,000[c]	6,885,000
Wisconsin	light	adequate	--	2,700,000	8,100,000	200,000[d]	7,900,000
Kansas	moderate	adequate	30	1,500,000	4,500,000	2,000[e]	5,998,000
N. Dakota	light	adequate	--	2,200,000	6,600,000	--	4,950,000

[a] Sowing rate 3 bushels per acre
[b] Adequate supplies of Hg dust
[c] 15,000 bu. Clinton although some Nemaha produced
[d] Bond-hybrids including Clinton
[e] Cherokee and Nemaha. Clinton being imported from Iowa, Illinois and Indiana.

The reports from the various States indicated that only Illinois, Indiana and Iowa are stocked with resistant seed material for 1948. Therefore, barring unforeseen events, H. victoriae should not be epiphytotic in those States. However, blight will be a potential threat in Nebraska, Kansas, Wisconsin and North Dakota where there are inadequate supplies of resistant seed. These States will partially overcome their deficit of resistant seed stock by importing from the States having surpluses.

In any event none of the States of the Upper Mississippi Valley region reported a scarcity of seed treatment materials. Therefore, a lack of fungicides should not be the cause of an epiphytotic of Helminthosporium blight on the oat seedlings next spring. Naturally, the intensity of seedling blight will be determined by the percentage of seed oats that are actually treated in the spring. In turn, the percentage of seed oats treated will be influenced by the effectiveness of local seed treatment campaigns.

RESEARCH AND MARKETING ACT CROP DISEASE FORECASTING PROJECT

CRAZY TOP OF CORN -- A GENE OR A VIRUS?

C. C. Wernham

In 1945 "Crazy Top" of corn appeared in a field of inbreds being tested for Helminthosporium maydis reaction (PDR 30: 26-28. 1946). Josephson and Johnson reported its occurrence in Kentucky a year later (PDR 31: 69-70. 1947). Benjamin Koehler originally described the disease in 1939 (Phytopathology 29: 817-820. 1939), and raised the question "Is it a gene or a virus?"

During the 1945 season crosses were made using pollen from a crazy top plant of No. 940, the central spike of which was normal, although all other tassel branches were leafy. The female parents were normal plants in ear-to-row cultures of Ill. Hy. in which crazy top plants appeared.

In 1946 the F_1 plants were normal and several ears were selfed or sibbed. In 1947, 60 seeds from each of ten F_1 ears were planted and two F_2 plants per row were selfed. All the F_2 plants were normal.

The reports to date on crazy top emphasize its occurrence in low lying areas in fields, or in fields subject to flood waters. The writer's 1945 field was heavily washed once during a heavy rain when the corn was about three inches high. The slope of the field, however, does not allow for standing water.

When the F_2 plants were 12 to 15 inches high, every other plant in each row was flooded artificially by injecting it hypodermically with five milliliters of water. Aside from a higher percentage of smut on these injected plants they were quite normal.

If crazy top is due to a gene or group of genes, it would seem that (1) the plants have not been exposed to the proper environment for gene expression, or (2) a sufficiently large population to allow segregates to appear has not been raised.

The writer has a considerable quantity of seed on hand. Should any other investigator like to repeat or continue this problem, the writer would be only too glad to furnish him with seed.

DEPARTMENT OF BOTANY, PENNSYLVANIA STATE COLLEGE, STATE COLLEGE

SOME NEW DISEASE RECORDS OF GRAMINEAE IN THE WESTERN UNITED STATES[1]

Roderick Sprague, George W. Fischer, and Jack P. Meiners[2]

During June of 1947 it was our good fortune to make a trip through Idaho, Utah, Arizona, New Mexico, eastern and southern California, western Nevada and eastern Oregon. Major attention was given to diseases of grasses and cereals and subsequent study of the quantity of specimens collected has resulted in establishing numerous apparently new State records.[3] These are listed by States below, together with some current new State records from Washington. A tabulation of these is presented in Table 1. What, from our files appear to be newly reported hosts for the western area, (and usually for the entire United States, and hemisphere) are preceded by an asterisk. We now have in our files a relatively complete list of the known fungi parasitic on Gramineae in 16 western States and the territory of Alaska. Besides the States cited in Table 1 our records show 1502 State citations (hosts x fungi) for North Dakota, 613 in South Dakota, 499 in Montana, 456 in Wyoming, 265 in Colorado, 472 in Minnesota, 349 in Iowa, 458 in Nebraska, and only 40 from Alaska. A considerable portion of the citations from the plains country (Sprague) have not been published yet but will be recorded in part in forthcoming texts.

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[1] Cooperative investigations between the Division of Plant Pathology, Agricultural Experiment Stations, Washington State College, and the Division of Forage Crops and Diseases, Bureau of Plant Industry, Soils, and Agricultural Engineering, U. S. Department of Agriculture. Published with the approval of the Director of the Washington Experiment Station as paper no: 765.

[2] Associate pathologist, pathologist and Chairman of Division of Plant Pathology, Washington State College and Agent, Division of Forage Crops and Diseases, U. S. Department of Agriculture, respectively.

[3] The labor of determining these species was divided as follows: smuts (Fischer); rusts (Meiners); leaf spots and blights (Sprague).

Table 1. Summary of the number of new and previously reported (old) State citations of parasitic fungi on Gramineae. Each citation on each individual host is tallied as one record for each separate State. Citations new to the Western United States are tallied in the far right-hand column. The citations are segregated into major groups such as bacteria, Phycomycetes, etc.

Group	Citations in the following Western States																New to Western region
	Ariz.		Calif.		Idaho		Nevada		N. Mex.		Oreg.		Utah		Wash.		
	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	
Bacteria	1	8	4	13	3	6	3			3	2	19	4	3	9	29	7
Phycomycetes		3	1	7		2		1		3		37		1	3	60	
Ascomycetes	3	16	6	46	1	25	3	3	1	18	4	111	9	9	4	100	10
Rusts	3	41	1	186		74	7	10	1	63	1	176	3	70	6	254	2
Smuts	6	57	8	77	1	63	5	20	2	38	6	106	5	60	6	189	10
Miscellaneous Basidiomycetes		2	1	4	2	11						69	1	3	1	58	
Fungi imperfecti	10	5	23	105	27	105	12	10	1	8	26	377	41	14	27	333	55
Miscellany (nonparasitic)		1	2	2	1	2		0			1	29	3	3	2	59	3
Total	23	133	46	438	35	288	30	44	5	133	40	924	66	163	58	1082	85

ARIZONA

Agropyron smithii Rydb.
Epichloë typhina (Pers. ex Fr.) Tul. -- Winslow.
Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Show Low.
Urocystis agropyri (Preuss) Schroet. -- Show Low.
Agropyron trachycaulum (Lk.) Malte
Scolecotrichum graminis Fckl. -- Grand Canyon

Agrostis alba L.
Ustilago striiformis (West.) Niessl. -- North Rim, Grand Canyon

Aristida adscensionis L.
Puccinia aristidae Tracy -- Santa Rita Mountains near Tucson
Aristida purpurea var. laxiflora Merr.
*Sorosporium consanguineum Ell. & Ev. -- Flagstaff

Bromus inermis Leyss.
Scolecotrichum graminis Fckl. -- North Rim, Grand Canyon
Selenophoma bromigena (Sacc.) Sprague & A. G. Johnson -- North Rim, Grand Canyon.
Bromus tectorum L.
Ustilago bullata Berk. -- Fredonia

Elymus macounii Vasey (Hordeum jubatum x Agropyron trachycaulum)
Puccinia montanensis Ell. -- Winslow.
Elymus triticoides Buckl.
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp -- Flagstaff

Koeleria cristata (L.) Pers.
Septoria calamagrostidis f. koeleriae (Cocc. & Mor.) Sprague -- Flagstaff

Muhlenbergia montana (Nutt.) Hitchc.
Ustilago bethelii Zundel -- Kaibab National Forest

Oryzopsis hymenoides (Roem. & Schult.) Rick.
Ustilago hypodytes (Schlecht.) Fr. -- Marble Canyon.

Pappophorum mucronulatum Nees
Phyllachora cinnae Tehon & Daniels -- Hartt.

Phleum pratense L.
Heterosporium phlei Greg. -- North Rim, Grand Canyon

Poa pratensis L.
Helminthosporium vagans Drechsl. -- North Rim, Grand Canyon

Poa secunda Presl.
Scolecotrichum graminis Fckl. -- Kaibab National Forest.

Sitanion hystrix (Nutt.) J. G. Sm.
Scolecotrichum graminis Fckl. -- North Rim, Grand Canyon.

Sporobolus giganteus Nash
*Erysiphe graminis DC. -- Hartt.
*Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Hartt.

Trichachne californica (Benth.) Chase
Puccinia atra Diet. & Holw. -- Santa Rita Mountains.

CALIFORNIA

Agropyron trachycaulum (Lk.) Malte
Erysiphe graminis DC. -- Inyo National Forest.

Bromus carinatus Hook. and Arn.
Selenophoma bromigena (Sacc.) Sprague & A. G. Johnson -- Tioga Pass.

Calamagrostis breweri Thurb.
*Fusarium nivale (Fr.) Ces. -- Tioga Pass.
*Mycosphaerella tulasnei Jacz. -- Tioga Pass.

Elymus condensatus Presl.
"Bends" (cause unknown) -- Big Pine.
Erysiphe graminis DC. -- Crowley Lake.
Selenophoma donacis (Pass.) Sprague & A. G. Johnson -- Deadman Pass; Mt. Whitney.
Septoria infuscans (Ell. & Ev.) Sprague -- San Diego.
Elymus condensatus var. rubens Piper
Erysiphe graminis DC. -- Crowley Lake.
*Septoria infuscans (Ell. & Ev.) Sprague -- San Diego
*Urocystis agropyri (Preuss) Schroet. -- Owens Valley; Crowley Lake.
Elymus triticoides Buckl.
Erysiphe graminis DC. -- Big Pine, Bishop.
Scolecotrichum graminis Fckl. -- Bridgeport.
Ustilago sitanii G. W. Fisch. -- Lone Pine.
*Urocystis agropyri (Preuss) Schroet. -- Bishop.

Festuca ovina var. brachyphylla (Schult.) Piper
Selenophoma everhartii (Sacc. & Syd.) Sprague & A. G. Johnson -- Tioga Pass.

Glyceria pauciflora Presl.
Septoria sp. (in press) -- Mt. Whitney.

Hordeum vulgare L.
Fusarium acuminatum Ell. & Ev. -- general[4].
Hendersonia graminis McAlp. -- general[4]
Pythium graminicola Subr. -- general[4]
Sclerotium rolfsii Sacc. -- general[4]

Melica aristata Thurb.
*Scolecotrichum graminis Fckl. -- Mt. Shasta.
Melica californica Scribn.
*Septoria nodorum Berk. -- Mt. Shasta.
Oryzopsis hymenoides (Roem. & Schult.) Rick.
*Fusarium nivale (Fr.) Ces. -- Deadman Pass; Mono Lake.
Ustilago hypodytes (Schlecht.) Fr. -- Crowley Lake.
Ustilago minima Arth. -- Adelanto.

Phleum alpinum L.
*Heterosporium phlei Greg. -- Tioga Pass.
Phleum pratense L.
Heterosporium phlei Greg. -- general

Poa epilis Scribn.
Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Tioga Pass.

Sitanion hystrix (Nutt.) J. G. Sm.
*Bacterium agropyri (O'Gara) Stapp -- Mono Lake.
*Erysiphe graminis DC. -- Crowley Lake.
*Fusarium nivale (Fr.) Ces. -- Mono Lake.

Stipa columbiana Macoun
*"Bends" (cause unknown) -- Mt. Whitney.
*Fusarium nivale (Fr.) Ces. -- Deadman's Pass.
Stipa comata Trin. & Rupr.
*Fusarium nivale (Fr.) Ces. -- Mono Lake.
Stipa coronata Corda
*Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp. -- Rainbow.
Stipa elmeri Piper & Brodie
*Ustilago hypodytes (Schlecht.) Fr. -- Crowley Lake.
*U. williamsii (Griff.) Lavrov -- Crowley Lake.
Stipa pulchra Hitchc.
Ustilago williamsii (Griff.) Lavrov -- Bonsall.
Stipa speciosa Trin. & Rupr.
*Bacterium agropyri (O'Gara) Stapp -- Johannesburg

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[4] Communicated by John W. Oswald

Stiporyzopsis bloomeri (Boland) Johnson (Oryzopsis hymenoides x Stipa occidentalis)
*Ascochyta stipae Died. -- Mt. Whitney.
*Fusarium nivale (Fr.) Ces. -- Mono Lake.
*Puccinia scaber Ell. & Ev. -- Crowley Lake, Mt. Whitney.

Trisetum spicatum (L.) Richt.
*Pseudomonas coronafaciens (Elliott) Stapp -- Tioga Pass.

Triticum aestivum L.
Fusarium nivale (Fr.) Ces. -- Ager[5].
Phoma terrestris Hansen -- General[4].

IDAHO

Agropyron repens (L.) Beauv.
Rhynchosporium secalis (Oud.) J. J. Davis. -- Donnelly.
Scolecotrichum graminis Fckl. -- Donnelly.
Agropyron trachycaulum (Lk.) Malte
*Ascochyta elymi Tehon & Daniels -- Donnelly.
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp. -- Smith Ferry.
Scolecotrichum graminis Fckl. -- Donnelly.
Rhynchosporium secalis (Oud.) J. J. Davis -- Donnelly.
Ustilago striiformis (West.) Niessl -- Donnelly.

Arrhenatherum elatius (L.) Beauv.
Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Grangeville.

Bromus brizaeformis Fisch. & Mey.
*"Bends" (cause unknown) -- Whitebird.
Bromus carinatus Hook. & Arn.
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp -- Smith Ferry.
Pyrenophora bromi (Died.) Drechsl. -- Smith Ferry.
Bromus inermis Leyss.
*Ovularia pulchella (Ces.) Sacc. (O. pusilla (Ung.) Sacc. & D. Sacc.) --Lawyer Canyon.
Bromus japonicus Thunb.
Septoria bromi Sacc. -- Grangeville.
Bromus secalinus L.
Rhizoctonia solani Kuehn (Basal eye spot) -- Whitebird.
Bromus tectorum L.
Fusarium nivale (Fr.) Ces. -- Donnelly.

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[5] From old files of Sprague, not previously identified

Calamagrostis rubescens Buckl.
*Septogloeum oxysporum Bomm., Rouss. & Sacc. -- Smith Ferry.

Danthonia californica Boland
Colletotrichum graminicola (Ces.) G. W. Wils. -- Grangeville.

Deschampsia danthonioides (Trin.) Munro
Scolecotrichum graminis Fckl. -- Grangeville.
Deschampsia elongata (Hook.) Munro
Scolecotrichum graminis Fckl. -- Smith Ferry.

Elymus canadensis L.
Rhizoctonia solani Kuehn. -- Hagerman
Scolecotrichum graminis Fckl. -- Hagerman
Elymus condensatus Presl.
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp -- Smith Ferry
Rhynchosporium secalis (Oud.) J. J. Davis -- Smith Ferry.

Glyceria pauciflora Presl.
Septoria sp. (in press) -- Lawyer Canyon

Hordeum murinum L.
*Ascochyta graminicola Sacc. -- Culdesac.
*Ascochyta hordei Hara -- Riggins.
Hordeum nodosum L.
*Septoria nodorum Berk. -- Donnelly.

Poa secunda Presl.
*Helminthosporium vagans Drechsl. -- Lawyer Canyon
Septoria macropoda var. grandis Sprague -- Grangeville.

Schlerochloa dura (L.) Beauv.
*Ascochyta graminicola Sacc. -- Culdesac.
*Fusarium nivale (Ces.) Fr. -- Culdesac.

Sporobolus cryptandrus (Torr.) A. Gray
Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Riggins.

Stipa columbiana Macoun
Scolecotrichum graminis Fckl. -- Payette River.
Stipa lemmoni (Vasey) Scribn.
Scolecotrichum graminis Fckl. -- McCall.
Stipa viridula Trin.
Scolecotrichum graminis Fckl. -- Payette River.

NEVADA

Agropyron spicatum (Pursh) Scribn. & Smith.
Erysiphe graminis DC. -- Quinn River Crossing.
Puccinia rubigo-vera (DC.) Wint. -- Quinn River Crossing.
Scolecotrichum graminis Fckl. -- Denio.
Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Denio.

Agrostis alba L.
Ustilago striiformis (West.) Niessl -- Wellington.

Distichlis stricta (Torr.) Rydb.
Dothidella aristidae (S.) Ell. & Ev. -- Wellington.

Elymus condensatus Pres.
Selanophoma donacis (Pass.) Sprague & A. G. Johnson -- Ryepatch, Quinn River Crossing.
Elymus triticoides Buckl.
*Dilophosphora alopecuri (Fr.) Fr. -- Wellington.
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp -- Smith.
Puccinia rubigo-vera (DC.) Wint. -- Winnemucca
Septoria infuscans (Ell. & Ev.) Sprague -- Winnemucca.
*Ustilago aculeata (Ule) Liro -- Wellington.
*Urocystis agropyri (Preuss) Schroet. -- Yerrington.

Hordeum jabatum L.
Scolecotrichum graminis Fckl. -- Winnemucca.
Hordeum jubatum var. caespitosum (Scribn.) Hitchc.
Scolecotrichum graminis Fckl. -- Winnemucca.

Oryzopsis hymenoides (Roem. & Schult.) Rick.
Ustilago hypodytes (Schlecht.) Fr. -- Wellington.

Phleum pratense L.
Heterosporium phlei Greg. -- general.

Poa scabrella (Thurb.). Benth.
*Bacterium agropyri (O'Gara) Stapp -- Winnemucca.
*Dilophospora alopecuri (Fr.) Fr. -- Winnemucca.
Puccinia poae-sudeticae (West.) Jørstad. -- Winnemucca.
Puccinia rubigo-vera (DC.) Wint. -- Winnemucca.
Poa secunda Presl.
Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Denio.

Sitanion hystrix (Nutt.) J. G. Sm.
Erysiphe graminis DC. -- Quinn River Crossing; Wellington.
Scolecotrichum graminis Fckl. -- Denio.

Sporobolus cryptandrus (Torr.) A. Gray
Puccinia simulans (Pk.) Barth. -- Ryepatch.

Stipa comata Trin & Rupr.
Puccinia stipae Arth. -- Winnemucca.
Ustilago hypodytes (Schlecht.) Fr. -- Wabuska.
Stipa thurberiana Piper
*Pseudomonas coronafaciens var. atropurpureum (R. & G.) Stapp -- Denio.
Puccinia scaber (Ell. & Ev.) Barth -- Denio.
Scolecotrichum graminis Fckl. -- Denio.

NEW MEXICO

Aristida purpurea var. laxiflora Merr.
Sorosporium consanguineum Ell. & Ev. -- Hot Springs.

Elymus macounii Vasey (Hordeum jubatum x Agropyron trachycaulum)
Ustilago striiformis (West.) Niessl -- San Antonio.

Polypogon monspeliensis (L.) Desf.
Erysiphe graminis DC. -- Socorro.

Sitanion hystrix (Nutt.) J. G. Sm.
Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Quemado.

Sphenopholis obtusata (Michx.) Scribn.
Puccinia eatoniae Arth. -- Garfield.

OREGON

Agropyron trachycaulum (Lk.) Malte
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp. -- Silvies.

Arrhenatherum elatius (L.) Beauv.
*Dilophospora alopecuri (Fr.) Fr. -- Goshen.

Deschampsia caespitosa (L.) Beauv.
*Dilophospora alopecuri (Fr.) Fr. -- Silvies.
Pseudomonas coronafaciens (Elliott) Stapp -- Silvies.

Deschampsia danthonioides (Trin.) Munro.
*Erysiphe graminis DC. -- Long Creek.
Deschampsia elongata (Hook.) Munro
Scolecotrichum graminis Fckl. -- Malheur National Forest.

Elymus aristatus Merr. (Hordeum nodosum x Elymus glaucus)
*Scolecotrichum graminis Fckl. -- Silvies.
Elymus condensatus Presl
Septogloeum oxysporum Bomm., Rouss. & Sacc. (? Euryachora stage) -- Malheur National Forest
Ustilago aculeata (Ule) Liro -- Blitzen.
Elymus condensatus var. pubens Piper
*Septoria infuscans (Ell. & Ev.) Sprague -- Silvies.
Elymus glaucus Buckl.
Selenophoma obtusa Sprague & A. G. Johnson -- Steens Mountains.

Festuca idahoensis Elmer
Septoria tenella Cke. & Ell. -- Malheur National Forest.

Glyceria borealis (Nash) Batchelder
Ustilago longissima (Sow.) Tul. -- Mt. Vernon.

Hordeum nodosum L.
*Dilophospora alopecuri (Fr.) Fr. -- Silvies.
Hordeum vulgare L.
False streak -- S. W. Oregon[6].

Koeleria cristata (L.) Per.
Scolecotrichum graminis Fckl. -- Malheur National Forest.
*Ustilago striiformis (West.) Niessl -- Silvies.

Poa ampla Merr.
Erysiphe graminis DC. -- Malheur National Forest.
Poa gracillima Vasey
*Mycosphaerella tulasnei Jacz. -- Steens Mountains.
Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Steens Mountains.
Poa juncifolia Scribn.
*Claviceps purpurea (Fr.) Tul. -- Roaring Spring.
Scolecotrichum graminis Fckl. -- Silvies.
Ustilago striiformis (West.) Niessl -- Silvies.
Poa nevadensis Vasey
*Heterosporium avenae Cud. -- Malheur National Forest.
*Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Silvies.
Poa palustris L.
Scolecotrichum graminis Fckl. -- Frenchglen.

6 Communicated by Karl Bauer

Poa secunda Presl.
*Helminthosporium vagans Drechsl. -- Steens Mountains.
*Selenophoma obtusa Sprague & A. G. Johnson -- Malheur National Forest.
S. donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Steens Mountains

Sitanion jubatum J. G. Sm.
Dilophospora alopecuri (Fr.) Fr. -- Silvies.
Ustilago sitanii G. W. Fischer -- Silvies.
Ustilago striiformis (West.) Niessl -- Silvies.

Spartina gracilis Trin.
Scolecotrichum graminis Fckl. -- Silvies.

Stipa lemmoni (Vasey) Scribn.
Ascochyta stipae Died. -- Battle Mountain State Park.
*Scolecotrichum graminis Fckl. -- Malheur National Forest.
*Hendersonia graminis McAlp. -- Malheur National Forest.
Stipa occidentalis Thurb.
Ascochyta graminicola Sacc. -- Malheur National Forest.
Scolecotrichum graminis Fckl. -- Malheur National Forest.
Stipa thurberiana Piper
Puccinia scaber (Ell. & Ev.) Barth. -- Jackass Mountains.
Scolecotrichum graminis Fckl. -- Jackass Mountains.

UTAH

Agropyron inerme (Scribn. and Sm.) Rydb.
Scolecotrichum graminis Fckl. -- Logan Canyon.
*Ascochyta sp. (Undescribed) -- Logan Canyon.
Agropyron repens (L.) Beauv.
Erysiphe graminis DC. -- Logan.
Scolecotrichum graminis Fckl. -- Clinton.
Agropyron smithii Rydb.
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp -- Bryce Canyon.
Septoria elymi Ell. & Ev. -- Logan.
Agropyron spicatum (Pursh) Scribn. & Smith
Scolecotrichum graminis Fckl. -- Logan.
Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- City Creek.
Agropyron subsecundum (Lk.) Hitchc.
Puccinia rubigo-vera (DC.) Wint. -- Wildewood.
Agropyron trichophorum (Lk.) Richt.
Erysiphe graminis DC. -- Nursery, Logan.

Agrostis alba L.
Sclerotium rhizodes Auers. -- Hoytsville.
Scolecotrichum graminis Fckl. -- Uinta National Forest.

Avena sativa L.
Erysiphe graminis DC. -- Logan.

Bromus carinatus Hook. and Arn.
*Ascochyta hordei Hara -- Logan.
Ascochyta graminicola var. diedickiana Baudys & Picb. -- Logan.
Heterosporium avenae Oud. -- Logan.
Scolecotrichum graminis Fckl. -- Logan.
Bromus inermis Leyss
"Bends", (cause unknown) -- Logan.
Selenophoma bromigena (Sacc.) Sprague & A. G. Johnson -- Logan.
Bromus japonicus Thunb.
Septoria bromi Sacc. -- Logan.
Bromus tectorum L.
*Tilletia caries (DC.) Tul. -- Palmyra Forest Camp, Uinta National Forest; Clinton; Cedar Knoll.

Dactylis glomerata L.
Rhynchosporium orthosporum Caldwell -- Logan Canyon.
Ustilago striiformis (West.) Niessl -- Logan.

Danthonia californica Boland
Ustilago residua Clinton -- Snyderville.

Elymus canadensis L.
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp -- Salina.
Elymus condensatus Presl
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp -- Morgan.
Rhynchosporium secalis (Oud.) J. J. Davis -- Clinton.
Scolecotrichum graminis Fckl. -- Hoytville.
Elymus glaucus Buckl.
Erysiphe graminis DC. -- Logan Canyon.
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp -- Logan Canyon.
Scolecotrichum graminis Fckl. -- Logan Canyon.

Festuca elatior L.
*Ascochyta hordei Hara -- Logan.
*Septoria avenae Frank -- Logan Canyon.
Festuca kingii (S. Wats) Cassidy
*Ovularia hordei (Cav.) Sprague -- Logan Canyon.
Selenophoma everhartii (Sacc. & Syd.) Sprague & A. G. Johnson -- Logan Canyon.

Hordeum distichon L.
Erysiphe graminis DC. -- Logan.

Hordeum jubatum L.
*Dilophospora alopecuri (Fr.) Fr. -- Logan.
Scolecotrichum graminis Fckl. -- Clinton.
Ustilago sitanii G. W. Fisch. -- Logan.
Hordeum vulgare L.
"Bends" (cause unknown) -- Logan.

Oryzopsis hymenoides (Roem. & Schult.) Rick.
Scolecotrichum graminis Fckl. -- Junction.
Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Junction.
Ustilago williamsii (Griff.) Lavrov -- Glendale.

Phalaris arundinacea L.
*"Bends" (cause unknown) -- Logan.

Phleum pratense L.
Scolecotrichum graminis Fckl. -- Clinton.

Poa canbyi (Scribn.) Piper
*Uromyces dactylidis Otth -- Morgan.
Poa fendleriana (Steud.) Vasey
*Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Bryce Canyon.
Poa gracillima Vasey
*Hendersonia culmicola var. minor Sacc. -- Logan Canyon.
*Heterosporium avenae Oud. -- Logan Canyon.
*Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Logan Canyon.
Poa juncifolia Scribn.
Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Bryce Canyon.
Poa pratensis L.
Erysiphe graminis DC. -- Logan Canyon.
Mycosphaerella tulasnei Jacz. -- Logan.
Septoria oudemansii Sacc. -- Logan.
Helminthosporium vagans Drechsl. -- general.
Poa scabrella (Thurb.) Benth.
*Claviceps purpurea (Fr.) Tul. -- Uinta National Forest.
Poa secunda Presl.
Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Bryce Canyon.

Secale cereale L.
Rhynchosporium secalis (Oud.) J. J. Davis -- Logan.

Sitanion jubatum J. G. Sm.
*Erysiphe graminis DC. -- Cedar Knoll; Junction.
Scolecotrichum graminis Fckl. -- Manti.

Stipa comata Trin. & Rupr.
Scolecotrichum graminis Fckl. -- Clinton.
Stipa viridula Trin.
Puccinia scaber (Ell. & Ev.) Barth. -- Cedar Knoll.
Scolecotrichum graminis Fckl. -- Cedar Knoll.

Triticum aestivum L.
Septoria tritici Rob. in Desm. -- Logan.

WASHINGTON

Agropyron amurense (authority not available)
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp -- Pullman.
Agropyron caninum (L.) Beauv.
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp -- Pullman.
Ustilago striiformis (Westend.) Niessl -- Pullman.
Agropyron elongatum (Host.) Beauv.
Fusarium nivale (Fr.) Ces. -- Pullman.
Agropyron inerme (Scribn. & Sm.) Rydb.
*Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Andrew's Creek, Chelan National Forest.
Agropyron trachycaulum (Lk.) Malte
Aphanomyces camptostylus Drechsl. -- Pullman.
Agropyron trichophorum (Lk.) Richt.
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp -- Pullman.

Agrostis alba L.
Septogloeum oxysporum Bomm., Rouss. & Sacc. -- Chelan National Forest.
Agrostis oregonensis Vasey
*Septogloeum oxysporum Bomm., Rouss & Sacc. -- Chelan National Forest.
Agrostis palustris Huds.
Colletotrichum graminicola (Ces.) G. W. Wils. -- Humptulips River.

Bromus brevis
Ustilago bullata Berk. -- Pullman.
Bromus inermis Leyss.
Pythium debaryanum Hesse -- Pullman.
Bromus secalinus L.
Puccinia graminis Pers. -- St. John.

Calamagrostis rubescens Buckl.
*Cercosporella subulata Sprague -- Chelan National Forest.
Selenophoma everhartii (Sacc. & Syd.) Sprague & A. G. Johnson -- Chelan National Forest.

Dactylis glomerata L.
Stagonospora arenaria Sacc. -- Sutherland Lake.

Elymus caput-medusae L.
Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Goldendale.
Elymus glaucus Buckl.
Septoria nodorum Berk. -- Lake Quinalt.
Elymus macounii Vasey (Hordeum jubatum x Agropyron trachycaulum)
Claviceps purpurea (Fr.) Tul. -- Goldendale.
Elymus triticoides Buckl.
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp -- Pullman.
Ustilago spegazzinii var. agrestis G. W. Fisch. & Hirsch. -- Pullman.

Festuca elatior var. arundinacea (Schreb.) Wimm.
Claviceps purpurea (Fr.) Tul. -- Pullman.
Festuca idahoensis Elmer
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp -- Pullman.
Festuca megalura Nutt.
*Colletotrichum graminicola (Ces.) G. W. Wils. -- Humptulips River.

Glyceria pauciflora Presl.
*?Eurychora sp. (Tar spot) -- Chelan National Forest.
*Septoria avenae Frank -- Chelan National Forest.

Holcus lanatus L.
*Colletotrichum graminicola (Ces.) G. W. Wils. -- Sultan

Hordeum vulgare L.
"Bends" (cause unknown) -- Pullman.

Koeleria cristata (L.) Pers.
Puccinia monoica Arth. -- Chelan National Forest.

Lolium perenne L.
"Bends" (cause unknown) -- Pullman.
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp -- Pullman.

Phleum pratense L.
Mastigosporium rubricosum (Dearn. & Barth.) Sprague -- Snoqualamie Falls.
Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Snoqualamie Falls.

Poa canbyi (Scribn.) Piper
Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Pulman.
Puccinia rubigo-vera (DC.) Wint. -- Pullman.
Poa compressa L.
*Puccinia rubigo-vera (DC.) Wint. -- Pullman.
Poa fibrata (no authority available)
Puccinia rubigo-vera (DC.) Wint. -- Pullman (in Soil Conservation Service Nuersery).
Poa longifolia Trin.
Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp -- Pullman.
Ustilago striiformis (West.) Niessl -- Pullman (in Soil Conservation Service Nurseries).
Poa secunda Presl.
Puccihia rubigo-vera (DC.) Wint. -- Pullman.
Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Pullman.
Typhula idahoensis Remsb. -- Douglas Co.

Sitanion hanseni (Scribn.) J. G. Sm. (Elymus x Sitanion)
*Pseudomonas coronafaciens var. atropurpureum (Reddy & Godkin) Stapp -- Goldendale.
Scolecotrichum graminis Fckl. -- Goldendale.
*Selenophoma donacis var. stomaticola (Baeumler) Sprague & A. G. Johnson -- Goldendale.
Sitanion hystrix (Nutt.) J. G. Sm.
Ustilago sitanii Fischer -- Quincy.

Sorghum vulgare var. sudanense (Piper) Hitchc.
Pseudomonas syringae Van Hall -- Pullman[7].

Stipa columbiana var. nelsoni (Scribn.) Hitchc.
Fusarium nivale (Fr.) Ces. -- Mansfield.
Stipa comata Trin. & Rupr.
Ustilago williamsii (Griff.) Lavrov -- Hooper.
Stipa elmeri Piper & Brodie
Scolecotrichum graminis Fckl. -- Methow Valley.

Trisetum spicatum (L.) Richt.
Septoria calamagrostides (Lib.) Sacc. -- Chelan National Forest.

Triticum aestivum L.
Septoria nodorum Berk. -- Snohomish Co.[8]

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[7] From a previously unrecorded collection by F. D. Heald, in 1916.
[8] Communicated by M. R. Harris.

Triticum durum Desf. x Agropyron trichophorum (in Experiment Station Plots)

*Cercosporella herpotrichoides Fron -- Pullman.
*Claviceps purpurea (Fr.) Tul. -- Pullman.
*Fusarium acuminatum Ell. & Ev. -- Pullman.
*Fusarium culmorum (W. G. Sm.) Sacc. -- Pullman.

Zea mays L.

Physoderma maydis Miyake -- Puyallup[9].

WASHINGTON STATE COLLEGE AND U. S. BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING

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[9] Communicated by Folke Johnson.

CHECK LIST REVISION

Freeman Weiss

ACHILLEA (COMPOSITAE)

ACHILLEA spp., YARROW. Hardy perennial herbs of Europe and N. America. A. MILLEFOLIUM L., MILFOIL (1) and A. LANULOSA Nutt. (2) are weeds but useful to wildlife; A. PTARMICA L. (3) and other spp. (4) are cultivated for ornament.

Agrobacterium tumefaciens (E.F.Sm. & Town.) Conn, crown gall. Ind. (3)
Camarosporium compositarum (Cke. & Harkn.) Sacc., on stems. Calif. (1,4)
Comandra pallida A.DC., parasitic on roots. Wash. (1)
Cuscuta sp., dodder. N. H. (4)
Erysiphe cichoracearum DC., powdery mildew. Mo., Mont., Pa., S. Dak., Vt., Wis. (1); Alaska (4)
Heterodera marioni (Cornu) Goodey, root knot. Ore.
Phoma erysiphoides Ell. & Ev., on stems. Colo. (1)
Puccinia millefolii Fckl. (III), rust. Calif., Colo., Ida., Mont., N. Mex., Ore., Utah, Wash., Wyo. (1,2)
Rhizoctonia solani Kuehn, root and stem rot. Northeastern and North Central States (1)

ACTINOMERIS (COMPOSITAE)

ACTINOMERIS ALTERNIFOLIA (L.) DC., YELLOW IRONWEED. Coarse perennial herb of the Central and Eastern States, and southward, sometimes grown in wild gardens.

Cercospora anomala Ell. & Halst., leaf spot. Iowa
Diaporthe arctii (Lasch) Nits. var. achilleae (Auers.) Wehm., on stems. Ind.
Erysiphe cichoracearum DC., powdery mildew. Pa. to Va. and Kans.
Gloeosporium sp., leaf spot. W. Va.
Puccinia verbesinae Schw. (0,I,II,III), rust. Me., Md., Tenn.

Ringspot -- virus (Marmor annularium McK., Nicotiana virus 12 K.M. Sm.). Va.

AGERATUM (COMPOSITAE)

AGERATUM spp., especially A. CONYZOIDES L. (1), A. HOUSTONIANUM Mill. (2), and others (3). Annual herbs, mostly of tropical America, cultivated for ornament.

AGERATU cont.

Cercospora agerati F.L.Stevens, leaf spot. Hawaii (1)
Puccinia conoclinii Seym. (II,III), rust. Ga., Miss., N. Car., Hawaii, P. R. (1). 0 and I unknown
Pythium mamillatum Meurs, root rot. ? Calif. (2)
Rhizoctonia solani Kuehn, root and stem rot. Ill., N. J. (1, 3)
Sclerotium rolfsii Sacc., southern blight. N. J., N. Car. (1, 2)

AGOSERIS (COMPOSITAE)

AGOSERIS spp. Mostly perennial herbs of prairies and plains in the Western States; some useful to wild life.

Bremia lactucae Regel, downy mildew. Colo., Wash.
Entyloma compositarum Farl., white smut. Colo.
Ovularia compacta Ell.& Ev., leaf spot. Colo.
Puccinia extensicola Plowr. var. hieraciata (Schw.) Arth. (0,I), rust. Colo., Mont., Wyo. II and III on Carex spp.
P. hieracii (Schum.) Mart. (0,I,II,III), rust. Wis. to Colo., Ariz., Calif., and Wash.
P. maculosa Schw. (III,) rust. Wash., Wyo.
P. stipae Art. (0,I), rust. Colo. II and III on Stipa spp.
P. suksdorfii Ell. & Ev. (0,III), rust. Mont. to Ariz., Nev., and Wash.
Ramularia agoseridis Ell. & Ev., leaf spot. Calif., Colo., Wash., Wyo.
Sphaerotheca humuli (DC.) Burr. (or var. fuliginea (Schlecht.) Salm.), powdery mildew. Calif., Colo., Mont., Nev., Utah, Wash., Wyo.

AMBROSIA (COMPOSITAE)

AMBROSIA ARTEMISIIFOLIA L., COMMON RAGWEED (1); A. BIDENTATA Michx., LANCELEAF R. (2); A. PSILOSTACHYA DC., WESTERN R. (3); A. TRIFIDA L., GIANT R. (4). Coarse annuals widely distributed in the U. S. (1,4), Central States and southward (2), and Western States (3); noxious weeds, especially (1) and (4) but all are wildlife food plants.

Albugo tragopogonis Pers. ex S.F.Gray, white rust. Me. to Ala., N. Mex., and Wis (1); Iowa, Kans., N. & S. Dak., Utah (3); Kans., N. Dak., Utah (4).
Bacterium solanacearum E.F.Sm., bacterial wilt. N. Car., ? Wis. (1)
Cercospora arcti-ambrosiae Halst., leaf spot. N. J., Hawaii, Okla. (4)
C. ferruginea Fckl. var. ambrosiae (Seym. & Earle) J.J.Davis, leaf spot. Wis. (1,3,4); Del., Ill., Kans., Md., Mo., N. J., N. Dak. (4)

AMBROSIA cont.

Cuscuta spp., dodder. Md. (1), Pa., Tex. (4). C. gronovii Willd, N. Y. (1,4). C. indecora Choisy. Tex. (4)

Diaporthe arctii (Lasch) Nits., on stems. Ga. (1,4); La. (4)

Didymella prominens Ell. & Ev., on stems. La. (4)

Ditylenchus dipsaci (Kuehn) Filip., stem nematode. N. Y. (1)

Entyloma compositarum Farl. and E. polysporum (Pk.) Farl., white smut. Me. to Fla., Tex., and Iowa (1); Ill. (2); Kans., Wis. (3); N. Y. to Md., Mo., and Wis. (4). The 2 spp., differing mainly in spore size, are inextricably mingled in reports.

Erysiphe cichoracearum DC., powdery mildew. General (1,3,4)

Monochytrium stevensianum Griggs, in cells of leaves and petioles. N. Car. (1)

Ophiobolus spp., on stems, probably all saprophytic but the following are commonly reported:

O. acuminatus (Sow. ex Fr.) Duby, N. Y.

O. anguillides (Cke.) Sacc., Ga., Ind., N. Dak. (4)

O. fulgidus (G.W.Clint. & Pk.) Sacc., Ind., N. J., N. Y. (4)

Ormathodium ambrosiae Olive, leaf spot. La. (4)

Phyllachora ambrosiae (Berk. & Curt.) Sacc., tar spot. Ala., Fla., Miss., S. Car., Va., Wis. (1); Nebr., Wis. (3); Ala., Ind., Wis. (4)

Phyllosticta ambrosiae J.J.Davis, leaf spot. Wis. (4)

Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (1,3,4)

Plasmopara halstedii (Farl.) Berl. & DeT., downy mildew. Me. to N. Car., Colo., and Wis. (1); Wis. to Kans., and Mont. (3); N. Y. to Va., Kans., and Minn. (4)

Protomyces andinus Lagh., stem gall. Wis. (1,4)

Puccinia canaliculata (Schw.) Lagh. (0,I), rust. N. Car., ? N. Dak. (1); Conn., Ill., Ind., Mo. (4). II and III on Cyperus spp.

P. xanthii Schw. (III), rust. Va. to Fla. and Nebr. to Tex. (1); Wis. to Colo. and Mont. (3); N. Y. to Ala., Tex., and Mont. (4)

Pyrenopeziza atrata Pers. ex Fckl., on stems. N. Dak., ? Pa. (4).

Pythium palingenes Drechs., rootlet rot. Va. (4)

Rhizoctonia crocorum (Pers.) DC. ex Fr., root rot. Tex. On A. aptera DC.

R. solani Kuehn, root rot. Nebr. (3)

Rhodochytrium spilanthidis Lagh., red leaf spot. Ala., Ga., Md., N. and S. Car., Tenn. (1); N. Car. (2); Ala. (4)

Sclerotinia sclerotiorum (Lib.) D By., stem rot. Fla. (1)

Sclerotium bataticola Taub., charcoal rot. Tex. (2)

S. rolfsii Sacc., southern blight. Fla. (1)

Septoria ambrosiicola Speg., leaf spot. Tex. On A. aptera

S. bacilligera Wint. Ill., Kans., Mo., Wis. (4)

Stagonospora ambrosiae Savile, on leaves. N. Dak. (4)

Uromyces junci (Desm.) C. Tul. (0,I), rust. Calif., Colo., Nebr., N. Dak. (3). 0 and I on Juncus spp.

AMBROSIA cont.

Mosaic -- virus. Marmor cucumeris Holmes, Cucumis virus 1 K.M.Sm., Fla. (1). Not identified, N. Y. (1, 4).

Yellows -- virus (Chlorogenus callistephi Holmes, Callistephus virus 1 K.M.Sm.). Md., N. Y., Tex., Wis. (1); N. Y., Wis. (4)

ANAPHALIS (COMPOSITAE)

ANAPHALIS MARGARITACEA (L.) Benth. & Hook., including var. SUBALPINA Gray, PEARL EVERLASTING. Perennial herb of Europe and N. America, mostly grown for ornament and used as a dried flower.

Mycosphaerella confinis (Karst.) Dearn. & House, on fading leaves. N. Y.

Septoria margaritaceae Pk., leaf spot. N. Y., Ore., Wis.

Uromyces amoenus Syd. (III), rust. Calif., Ida., Mich., Mont., Ore., Wash., Wyo.

ANTENNARIA (COMPOSITAE)

ANTENNARIA spp., EVERLASTING, PUSSY-TOES. Low perennial herbs of waste ground, often indicative of impoverished soil; of mostly northern distribution, some spp. extending to Va.; Colo., and Calif.; some grown in rock gardens, some furnish food for wildlife.

Albugo tragopogonis Pers. ex. S.F.Gray, white rust. Ill., Nebr.

Globulina antennariae Hasselbring, on leaves. N. Y.

Phoma antennariae Clements, leaf spot. Colo.

Phyllosticta antennariae Ell. & Ev., leaf spot. Del., Wis.

Septoria lanaria Fairm., leaf spot. N. Y.

S. mollosi Dearn. & House. N. Y.

Venturia fimbriata Dearn. & House, on leaves. N. Y.

ANTHEMIS (COMPOSITAE)

ANTHEMIS spp., CAMOMILE, as A. ARVENSIS L. (1), A. COTULA L. (2). European annuals, widely naturalized in waste ground, often becoming weeds in meadows. Other spp. are grown for ornament and as culinary herbs.

Heterodera marioni (Cornu) Goodey, root knot. Fla. (2)

Rhizoctonia solani Kuehn, damping off. Wash. (1)

Yellows -- virus (Chlorogenus callistephi var. californicus Holmes, Callistephus virus 1A K.M.Sm.) Calif. (2)

APLOPAPPUS (COMPOSITAE)

APLOPAPPUS spp., GOLDENWEED. Perennial, often woody, herbs and shrubs, mostly occurring on dry plains and foothills in the Western States; sometimes troublesome range weeds, one causing livestock poisoning; others are wildlife food plants.

Coleosporium solidaginis (Schw.) Thuem. (II, III), rust. Mont. On A. lanceolatus (Hook.) Torr. & Gray
Erysiphe cichoracearum DC., powdery mildew. Colo., Wyo.
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex.
Puccinia grindeliae Pk. (0, III), rust. On various spp. from Nebr. to Tex., Calif. and Mont.
P. marianae Syd. (III), rust. Fla. On A. phyllocephalus var. megacephalus (Nash) Hall
P. stipae Arth. (0,I), rust. Colo. On A. nuttallii Torr. & Gray. II and III on Stipa spp.
Syncarpella tumefaciens (Ell. & Harkn.) Theiss. & Syd., stem gall. Colo.
Thecaphora piluliformis Berk. & Curt., inflorescence and leaf smut. Ariz., Calif.

ARCTIUM (COMPOSITAE)

ARCTIUM LAPPA L., GREAT BURDOCK (1), A. MINUS Bernh., COMMON B. Coarse perennial herbs of Europe, naturalized, especially (2), in waste ground throughout the Eastern and Central States; wildlife food plants.

Ascochyta lappae Kab. & Bub., leaf spot. Ind. (1), N. Y. (2)
Cercospora arctii F.L.Stevens, leaf spot. Hawaii (1)
C. arctii-ambrosiae Halst. N. J., N. Car. (1); Wis. (2)
Diaporthe arctii (Lasch) Nits., on stems. Mich. (2)
Erysiphe cichoracearum DC., powdery mildew. Kans. (2)
Gloeosporium lappae Desm. & House, leaf spot. N. Y. (2)
Heterodera marioni (Cornu) Goodey, root knot. Ohio (2)
Phyllosticta lappae Sacc., leaf spot. Me. to N. Car., Ill. and Wis. (1)
Puccinia bardanae (Wallr.) Cda. (0,I,II,III). Mass. to Va., Ill. and Mich. (1); also N. Car., Mo., N. Dak., Utah, Wis. (2)
Rhabdospora arctii Kauff., on stems. Mich. (2)
Septoria lapparum Sacc., leaf spot. Ind., Mass., Mich. (1); Wis. (2)

Mosaic -- unidentified virus. N. Y. (1,2)

ARCTOTIS (COMPOSITAE)

ARCTOTIS STOECHADIFOLIA Berg., including var. GRANDIS (Thunb.), AFRICAN DAISY. Annual of S. Africa, grown for flowers and characteristic wooly foliage.

Cercospora sp., leaf blotch. Fla.
Heterodera marioni (Cornu) Goodey, root knot. Fla.
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex.

ARNICA (COMPOSITAE)

ARNICA spp. Perennial herbs of Europe and N. America, the native ones, E. cordifolia Hook., E. foliosa Nutt., E. latifolia Bong., and others, occurring mostly in mountain meadows and woodlands in the Western States from Calif. to Alaska; some are grown in rock or wild gardens, the European A. montana L. is used medicinally.

Entyloma arnicale Ell. & Ev., white smut. Colo., Ida., Mont., Utah, Wash., Wyo., Alaska
Erysiphe cichoracearum DC., powdery mildew. Colo.
Ovularia hughesiana Sacc., leaf spot. Mont.
Phyllosticta arnicae (Fckl.) Sacc., leaf spot. Colo., Mont., Utah, Wyo.
Puccinia arnicalis Pk. (II,III), rust. On numerous spp. from Alaska to Mont., Colo. and Calif. O and I unknown.
Sphaerotheca humuli (DC.) Burr. var. fuliginea (Schlecht.) Salm., powdery mildew. Calif., Wash., Wyo., Alaska
Uromyces junci (Desm.) L. Tul. (O,I), rust. Calif., Colo., Mont., Ore., S. Dak., Wyo. II and III on Juncus spp.

ARTEMISIA (COMPOSITAE)

ARTEMISIA spp., WORMWOOD. Mostly introduced perennial herbs, or sometimes woody, cultivated for medicinal (vermifuge) and flavoring properties, or for ornament, as A. ABROTANUM L. (1), A. ABSINTHIUM L. (2), A. SACRORUM Ledeb. (3) and A. VULGARIS L. (4); also A. BIENNIS Willd. (5), native in the Western and Central States, a wildlife food plant.

Albugo tragopogonis Pers. ex S.F.Gray, white rust. Iowa, Mont., N. & S. Dak., Wis. (5)
Cercospora ferruginea Fckl., leaf spot. N. Y., Wis. (2)
C. olivacea Otth, leaf blight. N. J., N. Y., N. Dak. (2)
Didymella effusa (Niessl) Sacc., on stems. N. D., Utah (5)
Diplodia abrotani Fckl., on stems. N. Dak. (1)
Erysiphe cichoracearum DC., powdery mildew. Calif. (4), S. Dak. (5)

ARTEMISIA cont.
Gloeosporium phyllachoroides Ell. & Ev., on leaves. Calif. (4)
Heterodera marioni (Cornu) Goodey, root knot. Fla. (3)
Peronospora leptosperma DBy., downy mildew. Iowa, Minn., N. & S. Dak., Wis. (5). Also reported as P. artemisiae-biennis Gäum.
Physalsopora obtusa (Schw.) Cke., on stems. S. Dak. (4)
Puccinia absinthii (Hedw. f.) DC. (0,I,II,III), rust. Calif. (4)
P. atrofusca (Dudl. & Thomp.) Holw. (0,I), rust. N. Dak. (5). II and III on Carex spp.
P. millefolii Fckl. (III), rust. Ore. (4)
Septoria fusca Pk., on leaves. N. Y. (4)
Synchytrium aureum Schroet., leaf gall. Wis. (5)
Systremma artemisiae (Schw.) Theiss. & Syd., on stems. Pa. (1)

ARTEMISIA spp., SAGEBRUSH (sometimes also wormwood, mugwort). Native, mostly perennial, woody herbs and some shrubs, characteristic of plains, foothills and mesas throughout the Western States; especially A. FRIGIDA Willd., FRINGED S. (1); A. GNAPHALODES Nutt., CUDWEED S. (2); A. HETEROPHYLLA Nutt. (3); A. LUDOVICIANA Nutt. (4); A. TRIDENTATA Nutt., BIG S. (5); and other spp. (6). These include some important browse plants (1, 5) for livestock and wildlife; some furnish fuel and medicinal ingredients; some are grown for ornament.

Acanthostigma occidentale (Ell. & Ev.) Sacc., on leaves. Ill., Iowa, Wis. (4)
Botrytis cinerea Pers. ex Fr., gray mold blight. Alaska (6)
Camarosporium compositarum (Cke. & Harkn.) Sacc., on stems. N. Mex. (1); Calif., Wash. (6)
Cercospora ferruginea Fckl., leaf spot. Wis. (4)
C. olivacea Otth, leaf spot. N. Y. (6)
Clasterosporium dothideoides Ell. & Ev., on stems. Mont. (6)
Comandra pallida A. DC., on roots. Wash. (5)
Cuscuta sp., dodder. Tex. (6)
Cylindrosporium artemisiae Dearn. & Barth., leaf spot. Wash. (6); Wis. (4, 6)
Erysiphe cichoracearum DC., powdery mildew. On 3, 4, and other spp., from Wis. to N. Mex., Calif., and Wash.; Alaska
Gibberidea artemisiae Earle, on stems. Nev. (5)
Gloeosporium heterophyllum Ell. & Ev., leaf spot. Calif. (3)
Heterodera marioni (Cornu) Goodey, root knot. Ala. (6)
Heterosporium sp., leaf spot. Alaska (6)
Leptosphaeria artemisiae (Fckl.) Auers., on stems. Nebr. (1); N. Dak. (4, 6); Mont. (6)
L. tetonensis (Ell. & Ev.) Rehm. N. Dak. (1), Mont. (6)
Peronospora leptosperma DBy., downy mildew. Calif., Iowa, Kans., N. Dak. (4); Wis. (4, 6). Also reported as P. sulfurea Gäum. in Calif., Kans., "Dakota" (4); Iowa (6)
Phyllosticta raui (Pk.) Dearn. & House, leaf spot. Mont. (4);

ARTEMISIA cont.

Wyo. (5), Colo. (6). Also reported as Macrophoma raui (Pk.) Berl. & Vogl.

Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (6)

Placosphaeria sp. (? P. haydeni (Berk. & Curt.) Petr.), on stems. Calif. (6)

Plowrightia tuberculiformis (Ell.) Sacc., on stems. Calif. (6)

Puccinia absinthii (Hedw. f.) DC. (0,I,II,III), rust. On all listed spp. and others, from Wis. to Tex., Calif., and Wash.; Hawaii

P. atrofusca (Dudl. & Thomp.) Holw. (0,I), rust. On all listed spp. and others, from Iowa to Tex., Calif., and Oreg. II and III on Carex spp.

P. millefolii Fckl. (III), rust. On all listed spp. and others, from N. Dak. to Tex., Calif., and Wash.; Alaska

Ramularia artemisiae J.J.Davis, leaf spot. N. Y., Wis. (6)

Rhabdospora ellisii Sacc., on stems. Colo. (6)

Rosellinia ovalis (Ell.) Sacc., on stems. Utah (6)

Sclerotium sp., stem blight. Oreg. (6)

Septoria artemisiae Pass., leaf spot. Wash. (6)

Syncarpella tumefaciens (Ell. & Harkn.) Theiss. & Syd., stem gall, black knot. Nev., Utah (5); Calif., Mont. (6)

Thalesia fasciculata (Nutt.) Britton, parasitic on roots. Wyo. (5)

Uromyces oblongisporus Ell. & Ev. (III), rust. Wyo. (5)

ASTER (COMPOSITAE)

ASTER spp. Numerous perennial (a few annual) herbs, predominantly North American and distributed throughout the U. S., in prairies, woodland borders, and waste ground. The cultivated hardy asters are derived mostly from A.ALPINUS L., ROCK ASTER (1); A. CORDIFOLIUS L., BLUE WOOD ASTER (2); A. ERICOIDES L., WHITE HEATH A. (3); A. LAEVIS L., SMOOTH A. (4); A. NOVAE-ANGLIAE L., NEW ENGLAND A. (5); A. NOVI-BELGII L., NEW YORK A. (6); A. PTARMICOIDES (Nees) T. & G., WHITE UPLAND A. (7); other spp. (8).

Agrobacterium tumefaciens (E.F.Sm. & Town.) Conn, crown gall. Conn. (6)

Alternaria sp. (? A. tenuis Nees ex Cda.), leaf spot (secondary). Mich., Tex., Vt. (6)

?Aphelenchoides fragariae (Ritz.-Bos) Christie, leaf nematode. Conn.

Ascochyta compositarum J.J.Davis, leaf spot. Wis. (8)

Asteromella asteris Pk., on leaves. Kans., Nebr. (8). A. astericola J.J.Davis, Wis. (3, 8), is perhaps the same.

Basidiophora entospora Roze & Cornu, downy mildew. Ill., Ind., Md., Mo. (5); Nebr. (8); Wis. (4,5,8)

ASTER cont.

Botrytis cinerea Pers. ex Fr., gray-mold blight. Conn., N. J., Alaska (8)

Cercospora asterata Atk., leaf spot. Ala. (8)

C. quarta Chupp & Greene. Wis. (8)

C. tertia Chupp & Greene. Wis. (7)

C. viminei Tehon. Ill. (8)

Cercosporella cana [Pass.] Sacc., leaf spot. Ore., Wis. (8)

Cladosporium astericola J.J.Davis, on leaves. Iowa, Wis. (8)

Clypeoporthella brencklei Petr., on stems. N. Dak. (8)

Coleosporium solidaginis (Schw.) Thuem. (II,III), rust. Reported on the spp. listed except (7), and on many others, throughout the U. S., more frequent north and west. 0 and I on 2- and 3-needle pines.

Comandra umbellata (L.) Nutt., parasitic on roots.

Cuscuta spp., dodder. C. glomerata Chois., C. gronovii Willd., and C. indecora Choisy are reported, chiefly in the Eastern and Central States.

Diporthe linearis (Nees ex Fr.) Nits., on stems. Ga., Mich., N. J., N. Y. (8)

Discosphaerina pseudhimantia (Rehm) Petr., black spot on stems, leaves and bracts. N.Y. (5); Iowa, N. J., N. Dak. (8). Based on Ascospora pseudhimantia Rehm, a nomen nudum; may include ? Laestadia scabiosa Lambotte & Fautr. as reported on Aster; is believed to be the ascigerous stage of Placosphaeria haydeni but not fully confirmed.

Entyloma astor-sericeanum Zundel, white smut. Wis. (8)

E. compositarum Farl., Mass. (2,6); Me. (6); S. Dak., Wis. (8)

Erysiphe cichoracearum DC., powdery mildew. General on all listed spp. and many others.

Exophoma astericola Tehon, on leaves. Ill. (8)

Gibberidea heliopsidis (Schw.) Shear, on stems, ? gall. N. Y. (5); N. Dak., Wis. (8)

Hendersonia leucelenes Fairm., on stems and leaves. N. Mex. (8)

Heteropatella alpina (Ell. & Ev.) W.B.Cooke, on stems. Calif. (8)

Heterodera marioni (Cornu) Goodey, root knot. Calif., Conn. (8)

Leptothyrium doellingeriae Dearn. & House, leaf spot. N. Y. (8)

Macrophoma astericola (Atk.) Tassi, on leaves and stems. Ala. (8)

Microdiplodia leucelenes Fairm., on stems and leaves. N. Mex. (8)

Ovularia asteris Solheim, leaf spot. Wyo. (8)

O. virgaureae (Thuem.) Sacc., leaf spot. Colo., Miss., Wis. (8)

Phoma iowana Sacc., on leaves. Iowa (7); N. H. (8); Wis. (7,8)

(Phomopsis brencklei Petr.): Clypeoporthella b.

Phyllachora asterigena Ell. & Ev., black leaf spot. Kans., Nebr. (8). See also Discosphaerina and Placosphaeria

P. haydeni (Berk. & Curt.) Dearn. See Placosphaeria h.

Phyllosticta astericola Ell. & Ev., leaf spot. Wis. (8).

Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (8)

Placosphaeria haydeni (Berk. & Curt.) Petr., black spot (tar-spot)

ASTER cont.

on leaves, stems, and bracts. Nebr. (3); N. Y. (5); Iowa, Kans., N. J., N. Dak., W. Va., Wis. (8). P. decipiens Dearn. and Fairm., N. Mex. (8), may be distinct. Has been reported as Ophiodothis h. (Berk. & Curt.) Sacc. and Phyllachora h. (Berk. & Curt.) Dearn., but is usually sterile or bears conidia only. See also Discosphaerina.

Puccinia asteris Duby (III), rust. Reported on the spp. listed except 1 and 7, and on many others, throughout the U. S.

P. extensicola Plowr. var. asteris (Thuem.) Arth. (0,I), rust. Reported on 2, 4, and many other spp., especially in the Northeastern, North Central and Western States. II and III on Carex spp.

P. grindeliae Pk. (III), rust. Colo., Kans., Nev., Wyo. (8). On Aster canescens Pursh and A. tanacetifolius HBK.

P. stipae Arth. (0,I), rust. Colo., Iowa, Kans., Nebr., N. & S. Dak. Chiefly on A. multiflorus Ait. II and III on Oryzopsis, Stipa, and Koeleria.

Pyrenophora hispida (Niessl) Sacc., on stems. Calif. (8)

P. leucelenes Fairm., on leaves and stems. N. Mex. (8)

Ramularia asteris (Phil. & Plowr.) Bub., leaf spot. Tex. (4,8); Mich. (5); Nebr. (5,8); Wis. (5,7,8); Wyo. (8)

R. filaris Fres. Colo., N. H. (8)

Rhytisma spp. Various names mistakenly referred to this genus, as R. asteris Schw., R. astericola Sacc., and R. solidaginis Schw., have been applied to blister galls on leaves of Aster spp. caused by gall midges, Asteromyxia spp.

Sclerotinia sclerotiorum (Lib.) DBy., stem rot. Conn. (8)

Sclerotium deciduum J.J.Davis, on leaves. Wis. (8)

Septoria angularis Tharp, leaf spot. Tex. (8)

S. astericola Ell. & Ev., leaf spot. Del., Mass., Mich., Ohio (2); Wis. (2,8)

S. asterina Tharp. Tex., Wyo. (8)

S. atropurpurea Pk. Vt. to Md., Ill., and Wis. (2); Wis. (4,5,8); Mich., N. Y., Pa., Wyo. (8)

S. punicei Pk. N. Y. (8)

S. shastensis Bonar & W. B. Cooke. Calif. (8)

S. solidaginicola Pk. Ill., Wis. (8)

Stagonospora herbarum (Cke. & Harkn.) Sacc., on stems. Calif. (8)

Synchytrium nigrescens J.J.Davis, leaf gall. Wis. (8)

Uromyces compactus Pk. (III), rust. Ariz., N. Mex., Tex. On A. spinosus Benth.

U. junci (Desm.) L.Tul. (0,I), rust. N. H. On A. macrophyllus L. II and III on Juncus spp.

Verticillium albo-atrum Reinke & Berth., wilt. Conn. (8)

Mosaic -- unidentified virus. Calif. (8)

Spotted wilt -- virus (Lethum australiense Holmes, Lycopersicon virus 3 K.M.Sm.). Calif. (8)

BACCHARIS (COMPOSITAE)

See PDR 24: 316-317. 1940

BALSAMORHIZA (COMPOSITAE)

BALSAMORHIZA spp., BALSAM-ROOT. Perennial herbs of plains and foothills in the Western States, sometimes grown for ornament; wildlife food plants. B. DELTOIDEA Nutt. (1), B. MACROPHYLLA Nutt. (2), B. SAGITTATA (Pursh) Nutt. (3); other spp. (4)

Cercosporella herpotrichoides Fron, on roots and stems. Ida., Ore., Wash. (4)
Erysiphe cichoracearum DC., powdery mildew. Wyo. (3)
Mycosphaerella balsamorrhizae Earle, on stems. Nev. (4)
Pleospora balsamorrhizae Tracy & Earle, on stems. Colo. (1,3)
Puccinia balsamorhizae Pk. (0,I,II,III), rust. General, within their respective range, on the spp. listed from Mont. to Colo., Calif. and Wash.
Septoria sp., leaf spot. Wash. (1)
Tylenchus balsamophilus Thorne, leaf gall. Utah (2,3)

BELLIS (COMPOSITAE)

BELLIS PERENNIS L., ENGLISH DAISY. European perennial, grown for ornament.

Botrytis cinerea Pers. ex Fr., gray-mold blight. Alaska
Cercospora sp., leaf spot. Minn.
Heterodera marioni (Cornu) Goodey, root knot. ? Fla.
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex.
Pythium mastophorum Drechsl., rootlet rot. Md.
Sclerotinia sclerotiorum (Lib.) DBy., crown rot. N. J.

Yellows -- virus (Chlorogenus callistephi Holmes, Callistephus virus 1 K.M.Sm.). N. J., N. Y.

BIDENS (COMPOSITAE)

BIDENS spp. Mostly annual weedy herbs, widely distributed in the U. S., especially B. BIPINNATA L., SPANISH NEEDLES (1); B. FRONDOSA L. (2) and B. LAEVIS (L.) B.S.P. (3), BEGGARS-TICKS; and B. PILOSA L., BUR-MARIGOLD (4); other spp. (5). All furnish food for wildlife; (4) is sometimes grown for ornament.

BIDENS cont.

Cercospora bidentis Tharp, leaf spot. Tex., Wis. (5)
C. megalopotamica Speg. Wis. (5)
C. umbrata Ell. & Holw. Ill., Ind., Kans., Mich., N. Car. (2); Iowa, Kans., Nebr., N. Car., Wis. (5)
Entyloma compositarum Farl., white smut. Iowa (2), Kans. (3), N. Mex. (5)
E. guaraniticum Speg. Mass., N. J. (2); Fla., P. R. (5)
Erysiphe cichoracearum DC., powdery mildew. Colo., Ind., Mass. (2); Tenn. (5)
Heterodera marioni (Cornu) Goodey, root knot. Hawaii (4)
Phyllosticta decidua Ell. & Kell., on leaves. Wis. (2)
Plasmopara halstedii (Farl.) Berl. & DeT., downy mildew. Mass. to Ala., Kans., and N. Dak., on various spp., especially (2)
Protomyces andinus Lagh., leaf and stem gall. Mass., Wis. (2,5)
Puccinia obtecta Pk. (0,I), rust. Ill., Ind., Iowa, Nebr., N. J., Wis. (2); Colo., Kans., Nebr., N. Mex., Wis. (5). II and III on Scirpus spp.
Septocylindrium concomitans (Ell. & Holw.) Hals., leaf spot. Ind., Iowa, N. J., Wis. (2); Iowa, N. Car., Wis. (5)
Septoria bidentis Sacc., leaf spot. Mo. (1); Wis. (2)
Sphaerotheca humuli (DC.) Burr., powdery mildew. General on all spp., especially (2). The var. fuliginea (Schlecht.) Salm. also is widespread.
Thecaphora pustulata Clint., stem smut. P. R. (4,5)
Uromyces bidenticola (P.Henn.) Arth. (0,I,II,III), rust. Calif., Fla., N. Mex., Hawaii, P. R. (4,5)
U. bidentis Lagh. (III). P. R. (4,5)

Mosaic -- unidentified virus. P. R. (5)

BOLTONIA (COMPOSITAE)

BOLTONIA ASTEROIDES (L.) L'Her. (1) and B. DIFFUSA Ell. (2). Tall perennials of prairies and plains, (1) in the Eastern and Central States, (2) Central and Southern; (1) is cultivated in wild gardens.

Entyloma compositarum Farl., white smut. Wis. (1)
Erysiphe cichoracearum DC., powdery mildew. S. Dak. (1)
Guignardia boltoniae Dorn. & Barth., on stems. Okla. (2)
Macrophoma boltoniae Dearn., on stems. Okla. (2)
Puccinia extensicola Plowr. var. asteris (Thuem.) Arth., (II,III), rust. Iowa, Nebr., N. & S. Dak. (1). 0 and I on Carex spp.
Septoria erigerontis Berk. & Curt. var. boltoniae Webber, leaf spot. Iowa, Wis. (1)
Uromyces compactus Pk. (0,I,II,III), rust. Tex. (2)

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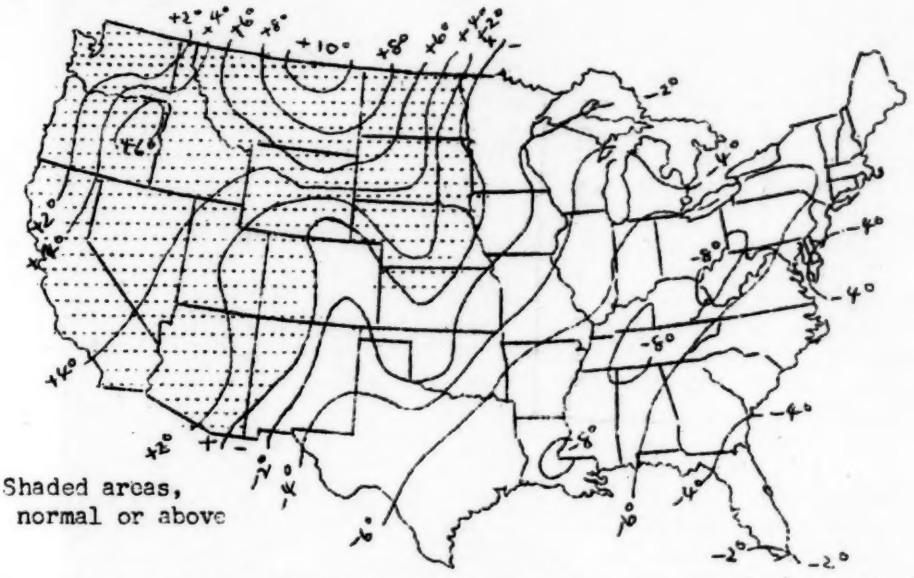
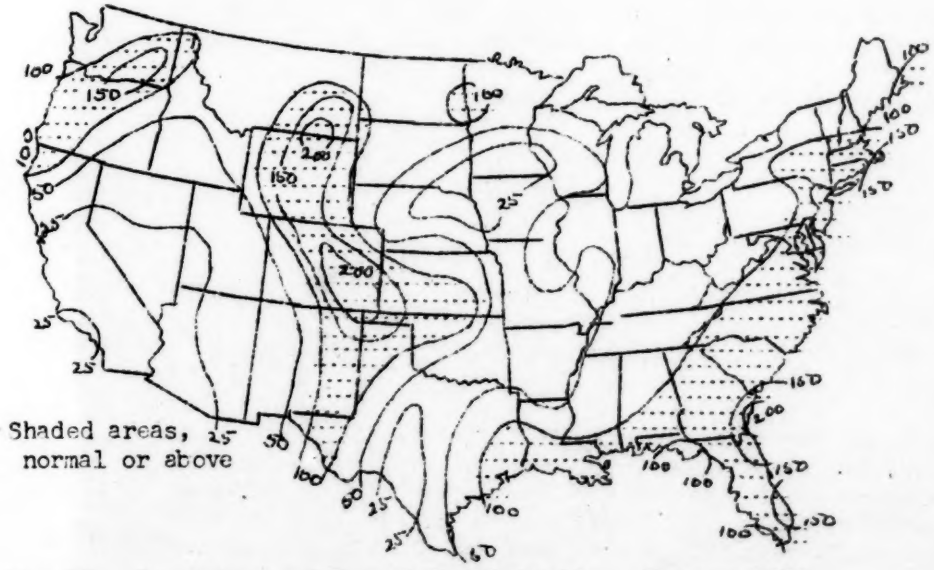


Map I. Departure of Mean Temperature from Normal, January 1948



Map II. Percentage of Normal Precipitation, January 1948

JANUARY WEATHER

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